

DOCUMENT OF THE INTER-AMERICAN DEVELOPMENT BANK

BRAZIL

CEARÁ SANITATION PROGRAM

(BR-0324)

LOAN PROPOSAL

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BASIC SOCIOECONOMIC DATA

For basic socioeconomic data, including public debt information, please refer to the following address:

<http://www.iadb.org/RES/index.cfm?fuseaction=externallinks.countrydata>

INFORMATION AVAILABLE IN THE RE1/EN1 TECHNICAL FILES

Preparation:

CAGECE audit reports, years 1999 through 2001

CAGECE financial projections

State of Ceará financial evaluation report

Estudo de Impacto Ambiental e RIMA do Programa SANEAR II [SANEAR II Environmental Impact Assessment and Environmental Impact Report]

Plano de Controle Ambiental-PCA do SANEAR II [SANEAR II Environmental Control Plan (PCA)]

Plano de Relocalização e Compensação da População Afectada [Resettlement and Compensation Plan for the Affected Population]

Projeto Executivo do Sistema de Esgotos de Fortaleza [Final Design for the Fortaleza Sewerage System]

Plano Diretor de Esgotos de Fortaleza [Fortaleza Sewerage System Master Plan]

Execution:

Operating Regulations

Environmental Management Plan

Compensation for Loss and Population Resettlement Plan

ABBREVIATIONS

ARCE	Agencia Reguladora de Servicios Delegados Del Estado de Ceará [Ceará State Regulatory Agency for Delegated Services]
BEP	Basic Environment Plan
CAGECE	Companhia de Saneamento do Estado do Ceará [State of Ceará Water and Sanitation Company]
COEMA	Conselho Estadual do Meio Ambiente [State Environment Council]
CoGERH	Companhia de Gestão dos Recursos Hídricos [Water Resources Administration]
EIA	Environmental Impact Assessment
GMARH	Environment and Water Resources Department
PAR	Action Plan to Relocate the Affected Population
PASS	Projeto de Ação Social em Saneamento [Social Action Program for Sanitation]
PMU	Program Management Unit
PIC	Public Information Center
PMSS II	Water Sector Modernization Program II
PRODETUR	Northeastern Brazil Tourism Development Support Program
PTI	Poverty-targeted investments
RAA	Relatório de Avaliação Ambiental [Environmental Evaluation Report]
RIMA	Relatório de Impacto do Meio Ambiente [Environment Impact Report]
SANEFOR	Fortaleza Sanitation – Basic Infrastructure Program
SDLR	Secretaría de Desarrollo Local y Regional [Ceará State Department of Local and Regional Development]
SDOES	Sistema de disposição oceânica dos esgotos sanitários [Fortaleza wastewater ocean disposal system]
SEINFRA	Secretaria de Infra-estrutura do Estado do Ceará [State of Ceará Infrastructure Agency]
SEMACE	Ceará State Environment Agency
SIMOP	Public works simulator
UFW	Unaccounted-for water
WTP	Willingness to pay



Brazil

Tentative Lending Program

2003

Project Number	Project Name	IDB US\$ Millions	Status
*BR0407	Banco Bradesco	50.0	APPROVED
BR0391	Downtown São Paulo Rehabilitation Procentro	100.4	APPROVED
BR0373	Culture and Citizenship for Social Inclusion	20.0	APPROVED
*BR0398	Novatrans Energy	30.0	APPROVED
BR0324	Ceara Sanitation Program	100.0	
*BR0395	Termonorte	59.2	
*BR0401	Bandeirante Investment Program	44.0	
BR0372	São Paulo Fiscal Administration	15.0	
*BR0402	Tele Norte Leste Bond Guarantee (Telemar)	75.0	
BR0375	Urban Transportation Curitiba II	80.0	
BR0396	Env. Rehabilitation of the Paraibuna River- Juiz de Fora	19.3	
BR0302	Fortaleza Urban Transport	85.2	
*BR0370	Campos Novos Hydroelectric Power Project	75.0	
Total - A : 13 Projects		753.1	
*BR0367	Termoacu Co-Generation Power Project	25.0	
*BR0412	Braskem	75.0	
*BR0413	Ulbra University and Hospital Project	42.3	
Total - B : 3 Projects		142.3	
TOTAL 2003 : 16 Projects		895.4	

2004

Project Number	Project Name	IDB US\$ Millions	Status
BR0397	Sanitation and Environmental Rehabilitation Belo Horizonte	42.5	
BR0400	Sao Bernardo do Campo Urban Transportation	144.0	
BR0390	Porto Alegre Environmental Recovery	75.0	
BR0403	External Control Modernization Program States	38.6	
BR0318	Tourism Development Program for the South of Brazil (PRODETUR SUL)	200.0	
BR0376	Environmental Improvement Program for Amapa	21.0	
BR0405	States and DF Administration Modernization I - PNAGE	93.0	
BR1001	Supporting Innovation in Food and Agriculture Research	36.0	
BR0369	Sector Program	500.0	
BR0358	Financing of PYMES - BNDES	1,000.0	
*BR1003	TGG - Guaruja Bulk Cargoes Terminal	20.0	
BR1004	Support to BOLSA FAMILIA Program	1,000.0	
BR1005	Igarapes de Manaus Environmental - Social Program	140.0	
BR1006	Macambira Anicuns Urban Program	52.0	
*BR1007	Banespa Trade Finance Facility	50.0	
Total - A : 15 Projects		3,412.1	

BR0378	Promotion of Ethics and Defense of Public Patrimony	3.0
BR0266	New Irrigation Model	90.0
BR0254	Florianopolis-Osorio Highway Moderniz.	322.0
BR0392	Cadaster and Land Regularization Program	65.0

Total - B : 4 Projects 480.0

TOTAL - 2004 : 19 Projects 3,892.1

Total Private Sector 2003 - 2004 545.5

Total Regular Program 2003 - 2004 4,242.0

*** Private Sector Project**



BRAZIL

IDB LOANS

APPROVED AS OF SEPTEMBER 30, 2003

	US\$Thousand	Percent
TOTAL APPROVED	25,340,509	
DISBURSED	21,408,558	84.48 %
UNDISBURSED BALANCE	3,931,951	15.51 %
CANCELATIONS	1,444,305	5.69 %
PRINCIPAL COLLECTED	8,698,177	34.32 %
APPROVED BY FUND		
ORDINARY CAPITAL	23,650,812	93.33 %
FUND FOR SPECIAL OPERATIONS	1,558,545	6.15 %
OTHER FUNDS	131,153	0.51 %
OUTSTANDING DEBT BALANCE	12,710,381	
ORDINARY CAPITAL	12,336,823	97.06 %
FUND FOR SPECIAL OPERATIONS	373,179	2.93 %
OTHER FUNDS	379	0.00 %
APPROVED BY SECTOR		
AGRICULTURE AND FISHERY	1,020,780	4.02 %
INDUSTRY, TOURISM, SCIENCE AND TECHNOLOGY	6,309,131	24.89 %
ENERGY	2,471,560	9.75 %
TRANSPORTATION AND COMMUNICATIONS	4,003,667	15.79 %
EDUCATION	887,038	3.50 %
HEALTH AND SANITATION	3,080,229	12.15 %
ENVIRONMENT	653,853	2.58 %
URBAN DEVELOPMENT	2,518,169	9.93 %
SOCIAL INVESTMENT AND MICROENTERPRISE	2,928,718	11.55 %
REFORM AND PUBLIC SECTOR MODERNIZATION	1,071,283	4.22 %
EXPORT FINANCING	294,977	1.16 %
PREINVESTMENT AND OTHER	101,103	0.39 %

* Net of cancellations with monetary adjustments and export financing loan collections.



BRAZIL

STATUS OF LOANS IN EXECUTION AS OF SEPTEMBER 30, 2003

(Amount in US\$ thousands)

APPROVAL PERIOD	NUMBER OF PROYECTS	AMOUNT APPROVED*	AMOUNT DISBURSED	% DISBURSED
<u>REGULAR PROGRAM</u>				
Before 1997	13	3,258,000	2,829,067	86.83 %
1997 - 1998	11	1,426,965	615,424	43.13 %
1999 - 2000	11	1,623,259	375,317	23.12 %
2001 - 2002	17	2,641,400	1,279,301	48.43 %
<u>PRIVATE SECTOR</u>				
1999 - 2000	2	98,700	74,479	75.46 %
2001 - 2002	2	100,186	85,174	85.02 %
TOTAL	56	\$9,148,510	\$5,258,762	57.48 %

* Net of cancellations. Excludes export financing loans.

CEARÁ SANITATION PROGRAM

(BR-0324)

EXECUTIVE SUMMARY

Borrower:	State of Ceará Water and Sanitation Company (CAGECE).	
Guarantors:	The Federative Republic of Brazil for debt servicing payment obligations and the State of Ceará for all other obligations assumed by the borrower.	
Executing agency:	CAGECE	
Amount and source:	IDB (OC):	US\$100.0 million
	Local:	<u>US\$ 66.7 million</u>
	Total:	US\$166.7 million
Financial terms and conditions:	Amortization period:	25 years
	Grace period:	5 years
	Maximum disbursement:	5 years
	Minimum disbursement:	3 years
	Interest rate:	variable
	Inspection and supervision:	1%
	Credit fee:	0.75%
	Currency:	United States dollar under the Single Currency Facility
Objectives:	<p>The general objective of the program is to improve the quality of life for the population of the state of Ceará through greater, more efficient delivery of water and sanitation services.</p> <p>Its specific objectives are to: (i) improve water supply quality at the beaches and in the rivers in the city of Fortaleza by expanding coverage of wastewater collection and treatment services from the present 52% to 70% in 2008; (ii) improve sanitation conditions for communities in the state with populations ranging from 15,000 to 100,000 inhabitants, by increasing the provision of potable water services from the present 75% to 80% in 2008, and sewage collection and treatment from the present 13% to 35% in 2008; and (iii) improve service efficiency by supporting operations management at CAGECE. The program goals are based on the United Nations Millennium Development Goals, which, for the sanitation sector are to reduce by</p>	

half the proportion of people without sustainable access to safe drinking water by 2015 (paragraph 1.12).

Description: The program has three components:

Fortaleza sanitation (US\$29.2 million): The purpose of this component is to increase sanitation service coverage by building sewerage systems in city districts and areas not presently served, with the addition of some 63,000 new connections, and of trunk sewers on the banks of the Maranguapinho, Cocó and Ceará rivers. Collected sewage will be conveyed to the existing pretreatment and ocean disposal system, which has the capacity to handle the additional wastewater.

Water and sanitation in the interior (US\$86 million): This component consists of: (i) building some 15 new water supply systems in communities ranging from 15,000 to 100,000 inhabitants so as to increase service coverage in the interior of the state from the present 75% to 80%, with the addition of some 15,000 new connections; and (ii) construction of close to 25 new wastewater collection and treatment systems in communities ranging from 15,000 to 100,000 inhabitants so as to increase service coverage, requiring some 45,000 new household connections and the necessary in-house facilities.

Institutional development (US\$11.5 million): The purpose of this component is to support CAGECE in its efforts to continue improving its operations management. It consists of two subcomponents: (i) reduction of unaccounted-for water (UFW); and (ii) operations development and improvements. The reduction of unaccounted-for water subcomponent consists of actions to reduce commercial losses resulting from inaccurate metering or illegal connections. The subcomponent includes household and master metering activities, review and update of land registries, and network refurbishing so as to reduce UFW levels from 38% to 30% by program completion, with intermediate goals of 35% by year-end 2004 and 32% by year-end 2006. The subcomponent also includes procurement of close to 300,000 water meters for use in the new connections installed under the program, and to increase the company's household metering activities and ensure preventive maintenance of existing meters, so as to shorten the revision cycle from 10 to five years. The operations development and improvement subcomponent entails support for implementation of the newly installed systems. Actions include a system for monitoring the sea outfall and industrial discharge points, and data processing for the sales division.

For execution purposes, program investments were divided into four bidding packages, so as to tie investments to progress made in utility operations.

Project role in the Bank's country and sector strategy:

The Bank's action in Brazil for the period 2000-2003 targets four strategic areas: modernization of the state, competitiveness, poverty and the environment. In the sanitation sector, the Bank will continue supporting the establishment of regulatory frameworks promoting long-term self-sustainability, access to services for broad segments of the population, private-sector participation, increased efficiency in the provisions of services, and environmental protection. The proposed program will support the environment and poverty pillars of the strategy agreed upon by the Bank and the country, as it will contribute to improving environmental conditions and the health of the population by improving water and sanitation utilities.

Coordination with other multilateral development institutions:

Among the multilateral banks, the World Bank is one of the chief agents in Brazil's sanitation sector. Its portfolio for the past three decades comprises 18 investment projects amounting to US\$2.3 billion. The World Bank is presently implementing four projects addressing three strategic areas: (i) institutional and regulatory reform; (ii) service expansion and improvement, with emphasis on the poorest segments of the population; and (iii) watershed management. This approach shares some features of the IDB sector strategy in Brazil, resulting in close coordination of actions by the two banks (paragraph 1.16).

Environmental and social review:

The environmental and social impact assessment concluded that the construction work planned under this project will help improve the quality of life for the population of Fortaleza and of medium-sized towns in the interior of the state of Ceará. The impact of the works will be localized and defined, and the program will include mitigation measures and their estimated cost. Requests for licenses were filed in accordance with existing legislation. The strategy of the program environmental management plan is to prevent, avoid, reduce, eliminate and compensate, where applicable, any negative impact while optimizing the positive impact. Two rounds of consultations were held with the beneficiary communities in November 2001 and December 2002, to discuss the environment analyses for the projects to be implemented in the interior of the state. Several consultations were held in Fortaleza between August and December 2002, with the communities concerned. The program Environmental Impact Assessment (EIA)/Environment Impact Report (RIMA) was released to the public on 13 August 2002 and 14 November 2002 at the Public Information Center (PIC) in Fortaleza. The program EIA/RIMA and Action Plan to Relocate the Affected Population (PAR) describe the

impact prevention, mitigation and compensation programs and actions, and their cost is built into this program (paragraph 2.3).

Benefits:

The primary benefit of the program will be to improve Fortaleza sanitation services, and expand water supply and basic sanitation services in medium-sized cities in the interior of Ceará state. These improvements will translate into better water quality at the beaches in western Fortaleza and greater availability of clean water and proper disposal of wastewater through treatment plants in the towns of the interior. The operating enhancement component will not only ensure the sustainability of the new quality levels achieved, but their progressive improvement will also position CAGECE to take on new projects in the future. Ultimately, these direct benefits are expected to reduce the incidence of waterborne diseases among the population targeted by the program.

Risks:

One potential risk is that program benefits may be offset by: (i) inadequate water resource management by the State of Ceará due to uncontrolled effluent discharges into the bodies of water and beaches; or (ii) lack of oversight by the regulatory agency.

To mitigate the first risk, this operation will strengthen the institutional capacity of CAGECE in environmental management, by consolidating the environment management department and involving the Ceará State Department of Local and Regional Development to help increase service delivery effectiveness and prevent uncontrolled effluent discharges in bodies of water and beaches (paragraph 5.35).

To mitigate the second risk, the Bank is working with the National Sanitation Secretariat of the City Ministry to implement and strengthen the State of Ceará Public Services Regulatory Agency (ARCE). To this end, work is ongoing to develop rules for monitoring services and hold workshops to train agency staff (paragraph 5.36).

Special contractual clauses:

Conditions precedent to the first disbursement:

- (i) Evidence must be submitted that the Program Management Unit has been established and is operational, and its staff has been appointed (paragraph 3.1).
- (ii) The Operating Regulations governing the component for water and sanitation in the interior have been approved by CAGECE and the State of Ceará and have entered into effect (paragraph 3.8).
- (iii) The concession contract between the Municipality of Fortaleza and CAGECE, with the participation of the State

of Ceará, authorizing CAGECE to provide the water and sewerage services in Fortaleza must be published in the *Diário Oficial do Estado do Ceará* [Ceará State official gazette] (paragraph 4.6).

- (iv) An agreement must be signed between the executing agency and the Ceará State Department of Local and Regional Development, in the terms previously agreed upon with the Bank, under which CAGECE delegates to the department the activities for implementation of the compensation and resettlement plan, except for supervision and monitoring (paragraph 3.25).

Other special execution conditions:

- (i) Before issuing calls for bids for the second package of program works (Annex II), CAGECE must demonstrate that collections for services provided by the systems it operates cover 110% of operating and maintenance costs and the servicing of all debts, that rates cover 75% of the marginal cost of services, and that unaccounted-for water does not exceed 35% (paragraph 3.5);
- (ii) Before issuing calls for bids for the third package of program works (Annex II), CAGECE must demonstrate that collections for services provided by the systems it operates cover 120% of operating and maintenance costs and the servicing of all debts, that rates cover 80% of the marginal cost of services, and that unaccounted-for water does not exceed 33% (paragraph 3.5);
- (iii) Before issuing calls for bids for the fourth package of program works (Annex II), CAGECE must demonstrate that collections for services provided by the systems it operates cover 120% of operating and maintenance costs and the servicing of all debts, that rates cover 85% of the marginal cost of services, and that the unaccounted-for water percentage does not exceed 32% (paragraph 3.5);
- (iv) Before initiating the works, evidence must be submitted that the contracts between CAGECE and contractors include the environmental provisions and specifications set forth in the Environment Control Program for Projects, Works and Operations of the Environmental Management Plan (paragraph 3.21);

- (v) Before initiating the works on the first program project, evidence must be submitted that supervisory services contracts have been executed in accordance with the terms of reference agreed upon with the Bank (paragraph 3.24);
- (vi) Before initiating the works on the Fortaleza sewerage system, evidence must be submitted that the 80 families from the Sossego community have been relocated and the affected owners duly compensated (paragraph 3.25);
- (vii) Before awarding any contract for the construction of works, evidence must be submitted that CAGECE is in full legal possession of all rights-of-way and other rights necessary for the land on which the works will be built (paragraph 3.7).
- (viii) Evidence must be submitted that rate collections cover the operating and maintenance costs and the servicing of all debts by at least 110% in the first year, 110% the second year, and 120% the third and following years (paragraph 3.14).

Poverty-targeting and social sector classification:

This operation qualifies as a social equity-enhancing project as described in the key objectives for Bank activity in the Report on the Eighth General Increase in Resources (document AB-1704). Although this operation qualifies as a poverty-targeted investment (PTI), the borrower will not use the additional 10% financing (paragraph 5.32).

Exceptions to Bank policy:

None.

Procurement:

Program consulting services and works are divided into four groups (Annex II). Calls for bids may only be issued once certain institutional and environmental requirements have been satisfied. These are described in the section on special contractual conditions. Procurement of goods and the awarding of contracts for works and consulting services will be carried out by CAGECE through a Special Procurement Committee, in conformity with the Bank procedures indicated in the loan contract. International competitive bidding will be required for procurement of goods when the cost is equal to or greater than US\$350,000, for construction contracts when the cost is equal to or greater than US\$5 million, and for consulting services for amounts greater than US\$200,000. These thresholds were recommended for Brazil by the Bank's Procurement Unit.

I. FRAME OF REFERENCE

A. General

- 1.1 The state of Ceará in northeastern Brazil, with a population of 7.4 million, covers an area of 146,800 square kilometers, or 9.4% of the regional and 1.7% of the total country area. The state capital is the city of Fortaleza with a population of 2.2 million. The state is divided into 184 municipalities divided into eight administrative areas.
- 1.2 Data for the year 2000 show that 5.3 million inhabitants reside in urban areas and 2.1 million in rural areas. Fortaleza has the largest urban concentration with 29.7% of the total state population. Of the 184 Ceará municipalities, 117 have fewer than 30,000 inhabitants, concentrating close to 64% of the total state population.
- 1.3 The principal economic activities are agriculture (54.3% of the state GDP) and industry (5.6% of the state GDP), followed by tourism and fishing for export. Almost 63% of the state's industrial park is located in metropolitan Fortaleza, which is also one of the main tourist attractions of the country. Because so many revenue-generating activities are concentrated along the coastline, the state government has had to implement a development policy centered around building and improving state infrastructure.
- 1.4 Water resources are limited in the state of Ceará where 93% of the territory is in the semiarid northeast, and rivers have an intermittent seasonal flow tied to low and unevenly distributed rainfall. Water management is primarily conducted through storage of surface waters. The existence of crystalline rock and the low level of rivers render ground water extraction difficult, and therefore not economically viable.

B. Status of the water and sewerage service

- 1.5 Coverage levels of potable water and sewerage services in Ceará are below the national average. In 2000, almost 80% of households were connected to the water supply system (compared to the national coverage of 85%),¹ and 26% of households to the sewerage system (compared to 42% nationwide).
- 1.6 Water coverage levels within the state do not vary significantly from the average of 80%, dropping slightly in medium-sized communities to approximately 75%. On the other hand, sanitation coverage in small and medium communities (with fewer than 50,000 inhabitants) is less than 5%, and in large communities no greater than 40%. This is also a serious problem in the city of Fortaleza where only 53% of

¹ National coverage figures from the Special Ministry of Urban Development (SEDU), "*Demanda, Oferta e Necessidades dos Serviços de Saneamento*" [Sanitation Services Demand, Supply and Needs].

households are connected to the collection network,² which means that almost half the wastewater is discharged untreated directly into the city's drains or watercourses. These discharges not only endanger the quality of the rivers running through the city, but also contribute to a deterioration in the quality of Fortaleza's beaches. According to Ceará State Environment Agency (SEMACE) data, every day in the past two years the beaches in western Fortaleza have been declared unsafe for swimming.

- 1.7 Although Ceará does not have a high population growth rate, the rising concentration of population in urban areas combined with the insufficiency of financial resources from lenders and the State government, explain the current shortage in water and sanitation services in the State of Ceará. The potable water shortage in medium-sized communities, and the sanitation shortfall in Fortaleza and small and medium communities throughout the state, are the reason for this program. The Government of Ceará decided to entrust program execution to Ceará Water and Sanitation Company (CAGECE), the utility currently servicing close to 80% of Ceará communities.³ The other communities will receive government support through other financing programs, such as the Joint Community Program of the Federal Government of Brazil, and the Alvorada Program of Brazil's Health Ministry.

C. CAGECE

- 1.8 CAGECE is a semipublic company created by Law 9499, enacted on 20 July 1971 to provide basic sanitation services throughout the state. In 2001, CAGECE submitted the operational indicators shown in the table below. These values are quite acceptable for this type of enterprise, with the exception of unaccounted-for water that should be reduced to closer to 25%.

² For the most part, wastewater collected from the Fortaleza sewerage system is sent to the pretreatment station with primary treatment and discharged into the sea through the sea outfall.

³ The other providers are the National Health Foundation and the municipalities, with market shares of 15% and 5% of the market, respectively.

**CAGECE operating and financial indicators
(2001)**

Water supply users	981,784
Sewerage users	360,949
Water supply coverage	80%
Sewerage coverage	29%
Household metering coverage	91%
Unaccounted-for water	37%
Number of employees per 1000 water users	3.3
Average rate (R\$/m ³)	1.12
O&M ⁴ cost coverage	116%
O&M cost coverage + depreciation	103%
Collections	98%

D. Regulatory framework governing the state water sector

- 1.9 Until late 1997, CAGECE was empowered to set its own rates, there being no clear separation between regulator and service provider. That year, however, the Government of Ceará launched a state reform covering not only administrative aspects, but also implementation of its regulatory duties. As a result, Law No. 12,786, enacted on 30 December 1997, created the Ceará State Public Services Regulatory Agency (ARCE) tasked with regulating, supervising and overseeing public services provided under the State's jurisdiction, whose operation was entrusted to public or private third party entities, by law, concession, permit or authorization. In addition, ARCE may be involved, through agreements, in public services delegated by the federal or municipal governments.
- 1.10 ARCE is a special independent agency reporting to the General Oversight and Environment Agency, with administrative, budgetary, financial and functional autonomy, regulated by Decree No. 25,059 issued on 15 July 1998. In compliance with this legislation, ARCE has a structure comprising an advisory board and a board of directors, supported by the offices of the executive director, five coordinators, an ombudsman, a legal counsel, and an administrative and financial office. The coordination offices include one for basic sanitation and one for rates. The sanitation coordination office issued three resolutions in August 2001 (numbers 24, 25 and 26) regulating the state sanitation sector. Resolution No. 24 sets the quality standards for water supply and for wastewater discharge into catchment basins, in addition to the penalties for non-compliance with the rules. Resolution No. 25 provides the general conditions for service provision and rate controls, and Resolution No. 26 the procedures for implementation of the general regulations set forth in the previous resolution.
- 1.11 ARCE signed a five-year agreement with CAGECE in September 2002 to regulate and monitor its rates and the quality of services provided in accordance with the

⁴ O&M= System operating and maintenance costs (including administrative and commercial expenses and taxes, excluding interest and provisioning).

above resolutions. This agreement is important in that it effectively separates sanitation sector functions in the State of Ceará. However, the municipality retains responsibility for providing the service, including the authority to set and control utility rates. Most municipalities in the state, including Fortaleza, delegated rate-setting authority to CAGECE through the concession agreement. Given that the municipalities are legally responsible for rate control, they must approve the agreement between CAGECE and ARCE. To offset the risk that municipalities may not agree to the rates set under the proposed program, one of the eligibility criteria will be that the municipalities enter into an agreement with ARCE empowering the latter to monitor rates and the quality of service provided by CAGECE (paragraph 3.9).

E. State sector strategy

- 1.12 In the 1990s, the State of Ceará developed and implemented a strategy for the delivery of water and sanitation services that to a certain extent reflects the core elements of the Bank's public services policy. For reasons of equity, public health, and as a basic priority for the government, the State of Ceará aims to achieve universal coverage as soon as practicable. It is therefore considering a massive public investment program aimed at increasing water and sewerage coverage to the population in medium-sized communities throughout the state. Moreover, in order to preserve the environment and to offset the negative environmental externalities associated with untreated wastewater, it is implementing a statewide sanitation investment program emphasizing metropolitan Fortaleza. The program goals were determined based on the United Nations Millennium Development Goals, as shown in the table below.

Service Coverage (%)			
Service/Region	1990	Goals for 2008	Millennium goals 2015*
Water			
Fortaleza	78.6	96.3	89.3
Interior	46.6	80	73.3
State	58.6	85	80
Sewerage			
Fortaleza	28.4	81	N/A
Interior	0	35	N/A
State	19	53	N/A

* Millennium Goals: Goal 7 (Ensure environmental sustainability), Goal 10: reduce by half the proportion of people without access to potable water by the year 2015 (baseline: 1990). Goal 11: increase the proportion of low-income people with access to sanitation services (there are no quantitative goals).

F. The Bank's participation strategy and justification

- 1.13 The Bank's action in Brazil for the period 2001-2003 will focus on four strategic areas: modernization of the state, competitiveness, poverty and the environment. In the sanitation sector in particular, the Bank will continue supporting the development of regulatory frameworks that promote long-term self-sustainability, access to services for broad segments of the population, private sector participation, increased efficiency in the provision of services, and environmental protection. The proposed program will support the environment and poverty pillars of the strategy agreed upon by the Bank and the country, as it will contribute to improving environmental conditions and public health by improving water and sanitation utilities.

G. The Bank's experience in the sector

- 1.14 Since 1960, the Bank has approved 30 sector loans and technical cooperation projects in Brazil, amounting to total contributions of US\$2.27 billion, including local counterpart contributions. Approximately 70% of this total was awarded to projects approved in the last 10 years, with a strong sewerage and wastewater disposal component. These loans essentially involved major projects with state enterprises in large metropolitan areas, such as the projects to clean up the waters of the Tietê River in São Paulo, Guanabara Bay in Rio de Janeiro, Baía de Todos os Santos (All Saints Bay) in Salvador, Guaíba River Basin in Porto Alegre, and the Federal District of Brasília.
- 1.15 In the specific case of the State of Ceará, the IDB approved the Fortaleza Basic Infrastructure Program – Sanitation (SANEFOR) (695/OC and 892/SF) in 1992, with final disbursement occurring in September 1998. The objective of this program, for a total amount of US\$265.6 million and a loan amount of US\$199.2 million, was to improve the quality of life for the urban population of Fortaleza by expanding coverage of the sewerage, storm drainage and urban sanitation systems. The project included construction of sewerage systems and intercepting sewers, a wastewater pretreatment station, storm drainage systems and two sanitary landfills. It also included complementary actions in environmental education and more rational use of water resources in the metropolitan area of Fortaleza, and strengthening state and municipal agencies responsible for operating and maintaining the different public utilities. The program increased the coverage of the sewerage system in Fortaleza from 20% to the present 52%, in addition to improving the storm drainage and solid waste infrastructure.

H. World Bank actions

- 1.16 The World Bank project portfolio for the past 30 years in Brazil's sanitation sector comprises 18 projects with investments amounting to US\$2.3 billion. Presently, it has four projects in the implementation phase: Water Sector Modernization

Program II (PMSS II), PROSANEAR, Espírito Santo Water Management and Coastal Clean-up, and the São Paulo Water Quality Project, totaling approximately US\$900 million. In general terms, the portfolio is centered on three strategic areas: (i) institutional and regulatory reform; (ii) expansion and improvement of sanitation services for the poorest segments of the population; and (iii) management of urban watersheds through integrated multisector actions relating to water quality, pollution control and basic urban infrastructure. This approach shares similar characteristics with the Bank's sector strategy in the country.

I. Lessons learned and operation design

1.17 In preparation for this program, the Bank commissioned an evaluation of the execution of the SANEFOR project focusing on its social and environmental aspects, to analyze the results and identify experiences and lessons learned from the implementation process that may be helpful in designing the proposed program. Moreover, in compliance with its contractual obligation under SANEFOR, the State is conducting an ex post evaluation to be delivered to the Bank in the fourth quarter of 2003. The preliminary finding of the evaluation, in conjunction with the Bank's analysis, may serve, albeit in a relatively limited manner, as a tool for this operation to draw lessons learned.

1.18 In general terms, the two analyses show that implementation of the SANEFOR program was effective since most of the planned works were executed, benefiting a population within the range estimated at the outset (see box). The project achieved significant positive results in terms of (i) progress made in building CAGECE's institutional capacity, including establishment of the Environment Unit tasked with managing environmental aspects associated with implementing and operating water and sanitation systems; (ii) technical training for professionals at several institutions involved in the project; (iii) implementation of quality monitoring measures for some environmental indicators; and especially (iv) creation of installed capacity within CAGECE to

Preliminary evaluation of the SANEFOR Program

Sanitary sewerage The objective of this component was fully met. However, it was interesting to note that program execution was impacted by reluctance on the part of households to connect to the public sewerage system. Although the program goals were ultimately met, it was not easy to bring new users into the system. What is more, the authorities had to devise special plans so as to improve the Fortaleza coverage rate.

Urban drainage The original goals for this component were not met, in terms of either physical and economical units or population, because resources had to be redirected to other areas, and analyses performed after the ex ante evaluation caused certain civil works to be canceled on the grounds of technical criteria not envisaged at the outset.

Urban clean-up The initial objectives under this component were fully attained.

Complementary systems In physical terms, the program fulfilled the initial objectives. The number of installed household and master meters was 25% higher than originally planned. It was also successful in commercial terms since business improved for the public utility providing the drinking water service. Billing based on estimated consumption fell by almost 75% in absolute terms between 1996 and 2000, which equates to an 80% reduction in unit billing per connection for the period. This means that CAGECE improved its business management thanks to more accurate billing and more reliable water metering.

manage social aspects, such as public information and community outreach, involuntary resettlement, and sanitary/environmental education.

- 1.19 The following lessons learned from execution of the SANEFOR project, first identified in the CAGECE Ex Post Evaluation Report, then in the SANEFOR Project Completion Report approved in December 1998, are relevant to the design and execution of the proposed operation: (i) works must be supported by final designs, or at least high-quality preliminary designs, and execution schedules must be realistic, taking into consideration that start up is always slow; (ii) costs must provide for a fund to cover household connections; (iii) the service-providing utility must be actively involved in program design and execution; (iv) there must be proper coordination and consistency between the institutional construction components of the program; and (v) cash compensation is not advisable, especially in the case of low-income families, as it offers no guarantee for the preservation of the living conditions for these families, confirming the lessons learned from other Bank projects with an involuntary resettlement component.
- 1.20 In response to the lessons learned from the evaluation of the earlier program and from sector evaluations in other countries, this program provides for: (i) a number of management actions to be carried out by the Environment Management Department recently created under the CAGECE, whose specific functions and responsibilities are to coordinate, supervise and oversee environmental aspects; (ii) the housing substitution approach to family resettlement to restrict the financial compensation option to cases of partial lot appropriation or full expropriation from higher income owners; (iii) final designs to be prepared for the representative sample of the program, and a realistic execution schedule based on the scale of the program; (iv) a household sewerage connection fund to be established to provide assistance to low-income families and expedite connections; (v) the service-providing utility to be both the borrower and executing agency; and (vi) an institutional component to be included to support the company's operational management, thereby positioning the company to handle future investment plans.

II. THE PROGRAM

A. Objectives and goals

- 2.1 The general objective of the program is to improve the quality of life for the inhabitants of Ceará through greater, more efficient delivery of water and sanitation services in the state. Its specific objectives are to: (i) improve the water quality at beaches and in the rivers in the city of Fortaleza, by increasing wastewater collection and treatment coverage from the present 52% to 70% by 2008; (ii) improve sanitation conditions for communities in the interior of the state with a population ranging from 15,000 to 100,000 inhabitants, by increasing water service coverage from the present 75% to 80% by 2008, and sewerage collection and treatment from the present 13% to 35% by 2008; and (iii) improve service efficiency by providing support for CAGECE's operational management, decreasing unaccounted-for water from 38% in 2003 to 31% in 2008.

1. Components

- 2.2 In pursuit of these program objectives, the following three components were devised, each relating to one of the above-mentioned specific objectives:
- a. **Fortaleza sanitation (US\$29.2 million).** The goal of this component is to increase sanitation service coverage by constructing sewerage systems in city districts and areas not presently served, with the addition of some 63,000 new connections, and of trunk sewers on the banks of the Maranguapinho, Cocó and Ceará rivers. Collected sewage will be conveyed to the existing pretreatment and ocean disposal system, which has the capacity to handle the additional wastewater.
 - b. **Water and sanitation in the interior (US\$86.1 million).** This component consists of: (i) building some 15 new water supply systems in communities ranging from 15,000 to 100,000 inhabitants, so as to increase service coverage in the state from the present 75% to 80%, with the addition of some 15,000 new connections; and (ii) construction of close to 25 new wastewater collection and treatment systems in communities with 15,000 to 100,000 inhabitants so as to increase service coverage, requiring some 45,000 new household connections and the necessary in-house facilities.
 - c. **Institutional development (US\$11.5 million):** The purpose of this component is to support CAGECE in its efforts to continue improving its operations management. It consists of two subcomponents: (i) reduction of unaccounted-for water (UFW); and (ii) operations development and improvements. **The reduction of unaccounted-for water subcomponent** consists of (i) measures designed to reduce commercial losses resulting from inaccurate metering or

illegal connections. The subcomponent includes household and master metering activities, review and update of land registries, and system refurbishing so as to reduce UFW levels from 38% to 30% by program completion, with intermediate goals of 35% by year-end 2004, and 32% by year-end 2006; (ii) procurement of close to 300,000 water meters for use in the new connections installed under the program, and to increase the company's household metering activities and (iii) preventive maintenance of existing meters, so as to shorten the revision cycle from 10 to five years. The **operations development and improvement subcomponent** entails support for implementation of the newly installed systems. Actions include a system for monitoring the sea outfall and industrial discharge points, and data processing for the sales division.

B. Cost and financing

- 2.3 The program totals an estimated US\$166.7 million. The table below shows the breakdown of program costs by source of funding and investment category.

Table of program costs (US\$ thousands)

	IDB	Local	Total	%
1. ENGINEERING AND ADMINISTRATION	4,851	7,149	12,000	7.20
1.1 Studies and designs	0	2,100	2,100	1.26
1.2 Executing unit	0	2,200	2,200	1.32
1.3 Works supervision	4,851	2,849	7,700	4.62
2. DIRECT COSTS	87,391	39,386	126,777	76.07
2.1 Fortaleza sanitation	20,896	8,300	29,196	17.52
2.1.1 Sewerage systems	18,895	6,298	25,193	15.12
2.1.2 Household and in-house connections	2,002	2,002	4,004	2.40
2.2 Water and sanitation in the interior	60,738	25,330	86,068	51.64
2.2.1 Water supply systems	11,628	3,876	15,504	9.30
2.2.2 Sewerage systems	46,562	18,906	65,458	39.28
2.2.3 Household and in-house connections	2,548	2,548	5,096	3.06
2.3. Institutional development	5,756	5,756	11,512	6.91
2.3.1 Reduction of UFW	3,309	3,309	6,618	3.97
2.3.2 Operational development and improvement	2,447	2,447	4,894	2.94
3. ASSOCIATED COSTS	684	1,096	1,780	1.07
3.1 Expropriation and resettlement	0	742	742	0.45
3.2 Environmental management	304	304	608	0.36
3.3 Monitoring and evaluation	230	0	230	0.14
3.4 Audit	150	50	200	0.12
4. UNALLOCATED	6,074	2,533	8,607	5.16
4.1 Contingencies	6,074	2,533	8,607	5.16
5. FINANCIAL COSTS	1,000	16,503	17,503	10.50
5.1 Interest	0	14,326	14,326	8.60
5.2 Commitment fee	0	2,177	2,177	1.31
5.3 Inspection and Supervision	1,000	0	1,000	0.60
TOTAL	100,000	66,667	166,667	100%
%	60%	40%	100%	

- 2.4 In accordance with the country financing matrix, the Bank will provide 60% of total program cost, equivalent to US\$100 million, from the Ordinary Capital, to be disbursed in hard currency pursuant to Bank policy. The local contribution will cover the remaining 40% of total program cost, US\$66,667,000 equivalent, to be funded by CAGECE, with contributions from the State of Ceará.
- 2.5 The loan is subject to following conditions: (i) variable interest rate; (ii) credit fee of 0.75% on undisbursed loan amounts; (iii) inspection and supervision expenses of 1% of total loan amount; (iv) a five-year disbursement period; (v) a five-year grace period; and (vi) a 25-year amortization period.

III. PROGRAM EXECUTION

A. Borrower and executing agency

- 3.1 CAGECE will be both the borrower and executing agency. It will establish a Program Management Unit (PMU) in charge of program execution, comprising a general coordinator, four experts (respectively in administration and finance, water supply, sewerage, and social and environmental impact), and an accountant. This PMU will report to the Technology and Development Directorate that was responsible for program preparation. The PMU will be supported by the entire CAGECE organization, especially the Departments of Civil Works, Business Management, and Operations Development Management, as well as by individual consultants that will provide advisory services on the bidding process, contractor oversight and supervision of construction work, including environmental aspects. **As a condition precedent to the first disbursement, CAGECE must submit evidence that the program management unit has been established and is operational and that its staff has been formally appointed.**

B. Execution plan

1. General

- 3.2 The PMU will act as liaison between CAGECE and the Bank and will be responsible for: (i) preparing and monitoring bidding under the program; (ii) coordinating supervision of contractors with the respective CAGECE offices for supervision of the work by suppliers, service providers and consultants; (iii) supervision and oversight of the activities of firms supervising the works; (iv) ensuring implementation of the measures for mitigation of any adverse environmental and social impact called for under the program, including resettlement; (v) preparing periodic progress reports on program execution, and ensuring compliance with the contractual conditions; and (vi) program accounting.
- 3.3 The *Fortaleza sanitation* component of the program will be executed as a specific works project, and the *water and sanitation in the interior* component as multiple works project. With respect to the *institutional development* component, decisions have already been taken concerning consultants, procurement of equipment, and contracts with consulting firms, and their respective technical specifications and terms of reference have been drafted.
- 3.4 The civil works were split into four groups as shown in Annex II, so that the activities aimed at improving service efficiency could be carried out at a pace matching construction progress. Accordingly, funds may not be committed for studies and civil works in each group until the executing agency has complied with a number of institutional and environmental requirements. Group one includes

activities to be executed in the first year of the program with investments that will have an immediate positive impact on company finances and the quality of the environment, that is, the operations efficiency enhancement program, including the UFW subcomponent, construction of the Fortaleza sewerage system, and three sanitation systems in communities in the interior. Group two includes phase two of the operations enhancement programs, phase two of the Fortaleza sewerage system works, and construction of seven water and four sewerage systems in communities in the interior. Group three comprises four water and six sewerage systems in communities in the interior. Lastly, group four comprises 10 sewerage systems and one water system in the interior.

- 3.5 Compliance with the conditions in the table below must be verified before issuing invitations to bid for civil works included in any one of these groups. No restrictions apply to bidding for program activities that are not part of these groups.

Indicator	Group II	Group III	Group IV
Collections / O&M+debt serv ⁵	1.10	1.20	1.20
Coverage of marginal cost ⁶	75%	80%	85%
Unaccounted-for water ⁷	35%	33%	32%

2. Execution of the Fortaleza sanitation component

- 3.6 The final design for the planned civil works were drawn up in compliance with the Fortaleza Water and Sewerage Master Plans. The projects are complete and the executive designs ready. June 2002 unit prices were used as reference to compute their cost.
- 3.7 No problems are anticipated with regards to land purchases since a large proportion of the work, such as potable water and sewerage networks, will be constructed along public roadways. The law provides for expropriation of land for public utilities, so there should be no problems or disputes to acquire the land and rights-of-way. **However, before any contract for construction of a specific component is awarded, the executing agency must demonstrate that it is in full legal possession of all rights-of-way and any other rights necessary for the land on which the works will be built.**

3. Execution of the component for water and sanitation in the interior

- 3.8 The component for water and sanitation in the interior of the state will be governed by Operating Regulations that include the following provisions: (i) eligibility

⁵ Includes all of the company's financial debts.

⁶ Average rate per m³ over marginal cost of service per m³.

⁷ Unaccounted-for water = (volume produced-volume invoiced) / volume produced.

criteria for municipalities to gain access to water and sewerage system construction; (ii) project eligibility criteria; and (iii) environmental education and control provided in conjunction with the civil works. **As a condition precedent to the first disbursement, CAGECE and the State of Ceará must approve the Operating Regulations and the Regulations must enter into force.**

- 3.9 CAGECE will select eligible beneficiaries, that is, municipalities other than Fortaleza where construction of water and sewerage systems may be financed with resources from this component, based on their annual investment plans. Beneficiary municipalities must meet the following requirements: (i) belong to a CAGECE business unit and at least cover the operation and maintenance costs of their respective systems; (ii) have entered into a concession contract with CAGECE for service provision, duly validated by the respective legislative authority, with at least 10 remaining years; (iii) have an established municipal regulatory agency for water and sewerage services or enter into an agreement with ARCE to control rates and the quality of services provided by CAGECE; (iv) have a population of 15,000 to 100,000 inhabitants; and (v) have a service coverage of less than 90% for water and 50% for sewerage.
- 3.10 Regarding the second item (eligible projects), the Operating Regulations provide guidelines for preparing projects, and verifying their economic and socio-environmental viability. The guidelines require evidence that the community participated in the project development phase, as well as the necessary Environmental Facility License. If family resettlement should prove necessary, a compensation and resettlement plan must be submitted and the resettlement completed before the works are undertaken. Sewerage projects require formal commitments signed by at least 80% of beneficiaries, and a financing mechanism through CAGECE to ensure household and in-house connections to the system once construction is complete.
- 3.11 With respect to item three (environmental education and control), projects will contain an environmental education and control plan to be implemented concurrently with the construction work so as to ensure proper management of the systems once they are built.
- 3.12 The scope and special characteristics of this component were based on a sample of five water projects with an average cost of US\$2.5 million and seven sanitary sewerage systems with an average cost of US\$4.7 million. The projects were selected from a universe of communities in the interior of the state, excluding those that either had sanitation projects in the execution phase or a high level of service coverage. This first screening left 44 municipalities as candidates for the water supply and 54 for the sewerage systems. These municipalities were subsequently evaluated against the above selection criteria, leading to the selection of the program sample, which accounts for approximately 30% of the cost of this component.

4. Execution of the business development component

- 3.13 The activities to be carried out under this component are part of an effort to improve service efficiency begun in 1998 with the replacement of CAGECE senior management. The activities span a wide spectrum, encompassing all the company's operational and administrative areas, despite the fact that some already receive funds through the World Bank's Water Sector Modernization Program II (PMSS II). Of the pending measures, it was decided the program should concentrate on those with a greater impact on operational efficiency and the company's financial situation, such as reduction of unaccounted-for water, operations control and planning, and implementation of a geoprocessing system and data processing for the commercial department. In terms of program execution, it will be necessary to hire consulting firms and procure the necessary equipment. Draft terms of reference have already been drawn up for the consulting firms, and studies were carried out to determine the requirements and technical specifications for the equipment.
- 3.14 Progress in this component will be measured by the benchmarks shown in the table below, which reflect the expected improvements in CAGECE's financial situation and operating efficiency.

Performance benchmarks					
	Year 1	Year 2	Year 3	Year 4	Year 5
Revenue / O&M+Depreciation	110	110	120	120	120
Collections / O&M+DebtServ	110	110	120	120	120
Coverage of marginal cost	70%	75%	80%	85%	85%
Unaccounted-for water	38%	35%	33%	32%	31%

5. Household connections and in-house facilities

- 3.15 When the SANEFOR program was launched, families whose homes were located across from the system but who could not afford the household connection or the in-house facilities were slow to connect to the public network. To counter this slow connection rate, given the high cost incurred to build the sewerage system, CAGECE drew up a plan to finance connections for low-income households to the sewerage system, with assistance from Caixa Econômica Federal (CEF). The plan remains in effect today and has financed close to 32,000 new connections, resulting in a significant increase in sewerage service coverage in Fortaleza. The proposed program will use the same approach and finance connections for low-and medium-income households in metropolitan Fortaleza and other localities in the interior. Customers not connected to the sewerage system may have to ask CAGECE to send an inspector to verify whether their home meets the technical conditions for a connection. Connection services are charged by linear meter of material and the

number of inspection boxes actually used for the works. Customers will receive a loan equal to the connection cost estimated by the company, and loan terms and conditions will be those currently applied by the CEF. If the customer agrees to participate in the program, CAGECE will issue a service order for the contractor to perform the connection work.

C. Program evaluation and social and environmental management

1. Institutional framework

- 3.16 The Ceará State Environment Agency (SEMACE) is the authority responsible for formulating the state environment policy in compliance with state and national rules and resolutions for the protection, control and rational use of environmental resources. Its responsibilities include licensing of activities that may impact the environment and establishing and enforcing environmental quality standards. In 2002, CAGECE established the Environment and Water Resources Department (GMARH) to handle environmental licensing for CAGECE projects, supervise execution of environmental and social programs included in the Environmental Management Plan under the SANEAR II program, prepare and enforce the environmental instructions and requirements in manuals on the execution of water and sanitation works and projects, and monitor environmental and sanitation education activities.
- 3.17 Applying the experience gained from the SANEFOR program, CAGECE prepared a draft operations manual for analysis of the representative sample. The manual calls for a simplified environmental and social impact report on each project to be prepared (*Relatorio de Avaliação Ambiental*) (RAA), including, where applicable, an assessment of the population affected by involuntary resettlement. The procedures for preliminary social and environmental quality control were followed in the environmental and social analyses carried out for the studies on the sample projects and the project designs. The RAAs served as inputs for preparation of the program Environmental Impact Evaluation.
- 3.18 CAGECE hired consultants to prepare the environmental impact assessment (EIA) on the program, in compliance with current environmental legislation and Bank recommendations. The EIA presents an overview of the scope of the program, its impact, and mitigation and compensation measures, for the watersheds in which the program municipalities are located. The EIA presents the results of the specific impact study for the Fortaleza project and the specific environmental studies for each of the 11 municipalities in the representative sample, based on the RAA.
- 3.19 The first version of the EIA was presented to the environmental authority, SEMACE, on 16 August 2002. The State Council for the Environment, COEMA, approved the EIA on 30 January 2003, concluding the prior licensing phase.

SEMACE will have to issue a facilities license for each proposed system (water and/or sanitation for Fortaleza and each municipality in the program).

- 3.20 Since this is a program EIA, the environmental and social impact on the sample projects was identified and evaluated, and mitigation and control measures developed for the program as a whole. The resulting environment programs were consolidated in a basic environment plan (BEP) integrating the mitigation and/or compensation measures for specific impacts with program management actions, applicable to these and to future projects. The BEP presents the consolidated environmental and social management plan for the program, and is an integral part of the loan proposal.
- 3.21 The BEP contains five specific programs: (i) environment control for projects, works and operations, consisting of three sets of environmental guidelines and specifications for program initiatives; (ii) community outreach, including public information, environmental and sanitation education, and institutional marketing for CAGECE and the SANEAR program; (iii) environmental monitoring comprising a number of projects: (a) monitoring the Fortaleza wastewater ocean disposal system (SDOES); (b) monitoring the sewerage systems and wastewater treatment plants of cities in the interior and respective bodies of water receiving effluent; (c) SANEAR program operational supervision of pumping stations; (d) biosolids management; and (e) monitoring industrial sewage from the Maracanaú industrial district; (iv) institutional development for CAGECE environmental management, aimed at strengthening the Environment and Water Resources Department and other units involved in areas and working on projects where environmental concerns must be addressed; and (v) compensation for losses and relocation, covering the involuntary resettlement of families, especially in Fortaleza, but also in municipalities in the interior. **Evidence that construction contracts between CAGECE and contractors include the environmental measures and specifications set forth in the program for environment control of projects, works and operations contained in the Environment Management Plan, will be a condition precedent for initiation of the works.**
- 3.22 The Environment and Water Resources Department (GEMARH) of CAGECE will be responsible for implementation of the environment control program, supported by the PMU and other CAGECE departments, especially in the areas of community outreach, sanitary and environmental education, and monitoring and quality control. To ensure proper performance, the program has earmarked resources to strengthen the GEMARH. For execution of the compensation and resettlement plan, CAGECE will receive support from the Ceará State Department of Local and Regional Development (SDLR) as the agency responsible for implementing state housing policy.
- 3.23 An environmental manual was developed as part of the Operating Regulations for use in future projects carried out under this program. The manual contains the

project eligibility criteria, as well as the procedures and requirements for evaluations, licensing, and environmental and social control, applicable to the entire process, from the planning stages to the system operations monitoring phase. Topics addressed include: general evaluation and licensing procedures; guidelines for the preparation of environmental and involuntary resettlement studies; public consultation procedures; instructions for reservoir protection plans; environmental procedures and specifications for construction work; and guidelines to supervise treatment plant operations.

- 3.24 A firm will be hired to supervise the works and ensure their compliance with the technical, social and environmental specifications for construction under the project. **Supervisory services must be hired in accordance with terms of reference agreed upon with the Bank as a condition precedent to initiation of construction work.**

D. Involuntary resettlement

- 3.25 Studies identified 102 properties to be partially or totally expropriated for construction of the systems included in the Fortaleza sanitation component. Of this total, 80 are low-income family residences mostly located in a shantytown (Favela do Sossego). In municipalities in the interior of the state, 46 properties were identified, but none are residential. Given the number of directly affected families, the resettlement strategy is to seek housing solutions on the urban market, using the compensation as payment for the new homes selected. The resettlement will be carried out by the SDLR team through a cooperation agreement and will be supervised by the PMU, which will monitor and evaluate the process on an ongoing basis to verify the results and impact upon program completion. The resettlement plan developed by CAGECE was discussed at length with the affected community. To ensure greater stability for the affected families and prevent the new properties from becoming commercial commodities, CAGECE is looking into the possibility of having the women legally recognized as heads of household under Brazilian law receive title to the new properties. The resettlement plan criteria and guidelines are included in the program Operating Regulations, and are applicable to all projects undertaken in any municipality. **As a condition precedent to the first disbursement, an agreement must be signed under which CAGECE delegates to the Ceará State Department of Local and Regional Development the activities for implementation of the compensation and resettlement plan. Another contractual condition will be that evidence must be submitted that family resettlement is complete and owners have been duly compensated.**

E. Sanitation and environmental education

- 3.26 CAGECE has a program known as “CAGECE in Action” that involves ongoing activities with system user communities. The program has been quite successful in a number of areas, such as increasing the sewerage system connection rate, loss

reduction, and sanitation education. The proposed program provides resources to strengthen the outreach and sanitation/environmental education activities, based on past experience. The ongoing activities will raise public awareness of: (i) the importance of water, and its scarcity in the region; (ii) notions of hygiene and family health; and (iii) the importance of the sanitation system to preserve the quality of life (health) of the population and protect the environment.

F. Consultation with affected and beneficiary communities

- 3.27 During the program preparation phase, several consultations were held with communities in Fortaleza and the municipalities in the sample. Outreach to program beneficiaries began in August 2001 with a public hearing in Fortaleza to discuss the sanitation master plan for the Fortaleza metropolitan area. In November that same year, meetings were held with the communities in each of the 12 selected municipalities to present the program in general terms and discuss the particular systems proposed for each town, their components, and other aspects of the project. Beginning in August 2002, a new round of town meetings took place in the municipalities in the interior, to go into greater detail and discuss specific aspects of each project. A special meeting was held in Fortaleza on 16 August 2002 to discuss the preliminary proposal for the family resettlement plan with the “Favela do Sossego” community, which would be partially affected by the program works. The meeting addressed the compensation strategy, eligibility criteria, and resettlement process mechanisms. Meeting results showed overwhelming acceptance of the program by the community, with some concerns about possible inconvenience in areas close to the pretreatment plant and pumping stations, and potential disruption during construction work.
- 3.28 The program EIA/RIMA was disclosed to the public in the city of Fortaleza on 13 August 2002 and 14 November 2002 at the PIC (headquarters and Country Office in Brazil).

G. Execution period and disbursement schedule

- 3.29 The program execution period will be five years. The table below summarizes the disbursement schedule.

Disbursement schedule (US\$ millions)				
Year	IDB	Local	Total	%
1	18.5	12.3	30.8	18%
2	19.0	12.7	31.7	19%
3	20.8	13.8	34.6	21%
4	22.9	15.6	38.5	23%
5	18.8	12.3	31.1	19%
Total	100.0	66.7	166.7	100

H. Procurement procedures and schedule

- 3.30 The procurement of goods and the awarding of contracts for construction and consulting services will be carried out by CAGECE in conformity with the Bank procedures stipulated in the loan contract. International competitive bidding will be required for the procurement of goods in amounts equal to or greater than US\$350,000, for construction contracts in amounts equal to or greater than US\$5 million, and for consulting services for amounts greater than US\$200,000. These thresholds are consistent with those recommended for Brazil by the Bank's Procurement Unit.

I. Recognition of expenses

- 3.31 CAGECE has asked the Bank to recognize up to US\$1.1 million in expenses incurred between October 2001 and the date the program is approved to prepare the projects included in the program and the associated consulting services as part of the local counterpart funding. With support from the Bank's Country Office in Brazil, the analysis mission was able to verify that the procedures followed for these works and consulting services were consistent with Bank procedures for procurement using local funds.

J. Flow of funds

- 3.32 The loan proceeds and CAGECE counterpart funding will be channeled through special bank accounts opened by CAGECE in the name of the program. CAGECE will use the funds in these accounts to hire consulting services and procure goods and services for the program.

K. System operation

- 3.33 CAGECE will be responsible for system operation and maintenance pursuant to the concession contracts for the works entered into with the beneficiary municipalities. In order to monitor the state of repair of the works, CAGECE must submit an annual operation and maintenance plan for the systems financed with program resources including a report on system operation and maintenance for the previous year and a report on the state of repair of the systems. This plan will be submitted to the Bank within the first quarter of every calendar year for five years following completion of the first program works.

L. Program monitoring and oversight

- 3.34 The Bank's Country Office in Brazil will monitor and oversee program execution. To this end, CAGECE will submit to the Bank an initial report with the work plan and detailed execution schedule. It will also submit semiannual progress reports

reflecting the benchmarks set forth in the logical framework and described in the next section. The status reports on the loan filed by the Country Office in Brazil will include information on any problems encountered during program execution and the solutions used to address such problems.

- 3.35 Within 30 months after signature of the loan contract, or once half the total program cost has been disbursed, whichever occurs first, a midterm evaluation of the program will be conducted. The midterm evaluation will be based on information provided to the Bank three months before program startup, and will review compliance with the program performance benchmarks, planning process and project cycle efficiency, and compliance with contractual obligations. Before the midterm review, CAGECE must provide the Bank with a program status report and details on the above items and the main areas of review. If the review shows that the program needs to be adjusted, CAGECE will have 60 days in which to submit to the Bank a plan to correct the problems identified.

M. Accounting, internal control and auditing

- 3.36 The Bank will require the PMU to: (i) maintain accounting and financial records, and the internal control system to manage the program resources in accordance with the provisions in clause 7.01 of the general conditions in the loan contract, so that administration of the program funds can be verified separately from other programs administered by CAGECE; (ii) prepare and present to the Bank the financial statements, semiannual revolving fund report, and any other financial reports that may be required; (iii) submit disbursement requests and supporting documentation to the Bank; and (iv) properly file all supporting documentation on contracts and disbursements with program funds.
- 3.37 Annual program and CAGECE financial statements will be submitted to the Bank within 120 days following the end of each fiscal year. In addition to the annual audit report, CAGECE, through the PMU, will submit semiannual financial and operational audit reports within 60 days following the end of each six-month period. Annual and semiannual audits will be conducted by an independent audit company selected in conformity with Bank policies and with previously approved terms of reference. The scope of the audits includes monitoring the CAGECE performance benchmarks and the environmental control measures included in the program. These audits will be conducted throughout the program execution period, and their cost will be financed with proceeds of the Bank loan.

N. Program evaluation

- 3.38 Although CAGECE will not be conducting an ex post program evaluation, it will collect and process the data in case the Bank decides to fund such an evaluation with its own resources. The evaluation will follow a methodology similar to that used for the ex ante analysis, including a cost-benefit and internal rate of return

analysis, and analyses of other relevant socioeconomic results. The data compiled will be forwarded to the Bank in annual reports as of the first year of execution. The first report will provide a detailed description of the data collection and processing procedure. Data will include: (i) budgeted and actual cost of the works; (ii) effective number of municipalities benefiting from the program; (iii) total number of households effectively connected to water and sewerage services, broken down by beneficiary municipalities; (iv) physical, chemical and bacteriological quality of treatment plant discharge; (v) cost and effectiveness of measures to reduce the environmental impact; and (vi) incidence of acute diarrhea in children under the age of five at health centers of the program area, broken down by beneficiary municipalities and the city of Fortaleza.

IV. BORROWER AND EXECUTING AGENCY

- 4.1 Companhia de Água e Esgoto do Ceará (CAGECE) is the borrower and program executing agency, and will also operate the systems. The State of Ceará will be the Bank guarantor, in addition to the federal government guarantee, and will also be the federal government counter guarantor.

A. CAGECE

1. Legal status and organization

- 4.2 CAGECE is a semipublic enterprise created by Law 9499 enacted on 20 July 1971, to provide water supply and sewerage services. Its functions include conducting studies, preparing projects, and building and operating the systems. CAGECE is governed by the general meeting of shareholders, the board of directors, and the managing board. The state of Ceará is the principal shareholder, holding 99.97% of the shares through its Infrastructure Department; the remaining 0.03% are held by other government institutions.
- 4.3 The company structure is similar to that of a private corporation. Members of the board of directors are appointed by the general meeting of shareholders for two-year terms. The board has seven members, including a representative of the state municipalities. Executive functions are carried out by the managing board, consisting of one director general and five area directors (operations, technology and development, sales, works, and administration and finance). CAGECE has 1,207 regular employees, 140 workers with trainee contracts, and 1,878 contractors hired through temporary employment agencies.⁸ The number of regular employees has declined in the last 10 years from 1,673 in 1991 to the present figure of 1,207.
- 4.4 In 1998, when a new senior management team was hired, CAGECE launched an initiative to improve operations, moving away from the traditional emphasis on system operations and maintenance, towards customer service. As a result of this ongoing process, CAGECE undertook a number of actions, including: (i) streamline and flatten the organizational structure; (ii) redefine processes so as to combine technical responsibilities (of a geographical nature) with central department services (of a functional nature); (iii) design and execute strategic projects in different management areas; and (iv) modernize the data processing and management information systems.
- 4.5 At the operational level, and to channel relations with its customers, the company was reorganized into business units responsible for system operation and maintenance in their respective areas, customer service, and relations with licensing

⁸ March 2002 data.

authorities. There are four business units for metropolitan Fortaleza, eight in the interior of the state managing an equal number of watersheds, and one for central services. These business units are structured around one manager and three coordinators (administrative, sales, and technical).

2. Status of concession contracts

- 4.6 At present, CAGECE operates in 152 of the 184 municipalities in the state. In most cases, its operations are limited to the county seats (*sedes municipais*) and/or larger towns. Because the Constitution of Brazil clearly states that with the exception of metropolitan areas, sanitation services are the prerogative of municipalities, CAGECE has been providing these services under concession contracts with the municipalities. The original term of most of these contracts has already lapsed and contracts were renewed to the satisfaction of CAGECE and the respective municipalities. In the specific case of Fortaleza, the contract was signed in March 2003 and was ratified by the Ceará Legislative Assembly and Municipality of Fortaleza on 10 October 2003. The contract is scheduled to be published in the *Diário Oficial do Estado do Ceará* [Ceará State official gazette] by the end of 2003. **As a condition precedent to the first disbursement, the concession contract between the Municipality of Fortaleza and CAGECE, with the participation of the State of Ceará, authorizing CAGECE to provide water and sewerage services in Fortaleza must be published in the *Diário Oficial do Estado do Ceará*.**
- 4.7 In order to meet the needs of smaller localities in the concession area, a community association system has been set up. It operates with technical assistance from CAGECE and state financial assistance to build the systems.

3. Rates and collection

- 4.8 The CAGECE rate structure is divided into four major user categories (household, industrial, corporate and public). Billing is monthly and rates are progressive, by consumption blocks starting with a minimum of 10 or 15 m³ depending on the category. The most recent rate review was in February 2002, with an average increase of 10%. The two previous reviews took place in May 2001 (average increase of 9.7%) and December 2000 (average increase of 14.8%), always greater than inflation. The median rate charged by CAGECE in 2001 was R\$1.12/m³ resulting in an operation and maintenance cost coverage of 116%, and operation, maintenance and depreciation coverage of 103%.
- 4.9 Users pay their bills through a network of lottery vendors and pharmacies with outlets throughout the state, so they have access to many points of payment. Collections reached 98% in 2001—a percentage that has been maintained in recent years—with an accounts receivable portfolio (past due and not past due) equivalent to billings for only 2.3 months.

4. Financial situation

- 4.10 The table below summarizes annual CAGECE earnings for the period 1998-2002, in millions of current reais. For reference purposes, the U.S. dollar exchange rates for the real over the same period were: US\$1 = R\$1.16 in 1998, R\$1.81 in 1999, R\$1.83 in 2000, R\$2.4 in 2001 and R\$2.96 in 2002.

CAGECE statement of income (in R\$ millions)					
	1998	1999	2000	2001	2002
Operating revenue	129.2	154.8	161.3	193.4	224.2
Operating expenses	-105.7	-104.9	-122.6	-166.2	-194.4
Operating income	23.5	49.9	38.7	27.2	29.8
Depreciation	-18.0	-17.8	-17.6	-22.4	-23.4
Other income/(expenses)	-4.4	-3.8	1.1	1.0	-0.2
EBIT	1.1	28.3	20.0	5.8	6.2
Financial income/(expenses)	-13.9	-18.0	-15.1	-18.9	-18.5
EBT	-12.8	10.3	4.9	-13.1	-12.3
Taxes	3.4	-5.8	-0.8	1.7	2.7
Net income	-9.4	4.5	4.1	-11.4	-9.6
O&M coverage	122%	148%	132%	116%	115%
O&M+D coverage	104%	126%	115%	103%	103%

- 4.11 These figures show that CAGECE reported losses of R\$11.4 and R\$9.6 million in 2001 and 2002, respectively. These losses were essentially due to an increase in operating costs resulting from the rent the state of Ceará began to charge for CAGECE's use of the water and sewerage systems funded directly by the State under the SANEFOR Program (695/OC-BR and 892/SF-BR). Payment of this rent, amounting to R\$19.2 million in 2001, and R\$25.2 million in 2002, did not generate any disbursements for CAGECE as the parties agreed to a debt-for-shares swap. However, the State of Ceará is empowered to demand cash payment for future rent.
- 4.12 The table below shows the CAGECE collections compared with the cost of service and the timely payment of its financial obligations. The rates charged by the company generated sufficient revenues not only for timely payment of system operation and maintenance costs, but also interest and debt servicing payments, leaving a surplus for investment.

CAGECE cash generation capacity (in R\$ millions)					
	1998	1999	2000	2001	2002
Collections	126.1	147.5	158.7	190.2	223.1
Operating expenses	-105.7	-104.9	-122.6	-166.2 ¹	-194.4 ²
Debt servicing	-3.4	-3.8	-5.8	-14.2	-17.1
Surplus / (Deficit)	17.0	38.8	30.3	9.8	11.6

¹ Includes R\$19.2 million for use of systems financed by the state of Ceará not paid in cash but swapped for shares.

² Includes R\$25.2 million for use of systems financed by the state of Ceará not paid in cash but swapped for shares.

4.13 Total investments have fluctuated around R\$60 million,⁹ funded with the cash surpluses referred to above, with subsidies from the state of Ceará (about 24% of total investments),¹⁰ and with debt. However, CAGECE's debt (R\$174.9 million as of December 2002) remains low, as a whole since the resulting debt-to-equity ratio is 20%.

4.14 CAGECE's financial position is highly dependent on the Fortaleza business units. Although the business units in the interior as a whole generate enough income to cover direct system operation and maintenance costs, the Fortaleza business units generate the surplus to cover overhead, and administrative and commercial costs, in addition to all debt servicing and the surplus for investment shown above.

5. Consumer relations

4.15 In 2000, CAGECE management decided to create a consumer board with a view to increasing user involvement in company actions. However, the board has not yet begun to operate because of issues under its regulations to appoint community representatives. In an effort to come up with an interim solution, the company established an Office of the Ombudsman in 2001, tasked with hearing complaints and serving as a channel for communications with consumers. CAGECE continues to work on the internal regulations for the consumer board, which will be made up of representatives of industrial, corporate and household consumers, and civil society. Since this Board will be instrumental in monitoring, CAGECE actions, the state government is drafting regulations for the consumers board of the state of Ceará Water and Sewerage services, under the State of Ceará Infrastructure Department (SEINFRA).

⁹ 1997: R\$38.6 million; 1998: R\$54.8 million; 1999: R\$57.3 million; 2000: R\$73.5 million; 2001: R\$67.8 million.

¹⁰ 1997: R\$21.9 million; 1998: R\$7 million; 1999: R\$8.1 million; 2000: R\$18.9 million; 2001: R\$13.5 million.

6. Short- and medium-term prospects

- 4.16 In general terms, CAGECE's institutional and financial situation has improved in recent years. However, in the short and medium terms, the evolution of the situation may be affected by two issues: (i) the need to formally renew the concession contract between CAGECE and the Municipality of Fortaleza; and (ii) the need to formulate and implement a clear policy for the flow of funds between CAGECE and the state of Ceará.
- 4.17 With respect to the first issue, a concession contract was executed in March 2003. With respect to the second, on the one hand the state of Ceará contributes regularly to finance part of CAGECE's investments, and has indicated its willingness to provide the local counterpart funding for this program. On the other hand, it has started shifting to the company the cost burden of its direct investments in the water and sanitation systems operated by CAGECE (the previously mentioned charges of R\$19.2 million and R\$25.2 million). Then again, the reverse situation exists: the state of Ceará is operating systems through the Water Resources Management Company (COGERH) that were financed by CAGECE. A study is underway to determine the value of each party's assets that belong to the other, to be used as a basis to offset the accounts.
- 4.18 Once these negotiations are concluded, the future financial situation of CAGECE will be entirely in company hands and will depend on periodic rate hikes to cover the marginal costs of the services and continue improving service efficiency. The "Financial viability" section under the program in the "Viability and Risks" chapter provides a more detailed analysis of the projected financial situation of CAGECE, taking the above-mentioned issues into account.

B. The state of Ceará

1. Program participation

- 4.19 Although CAGECE will be the borrower and executing agency, the state of Ceará will be indirectly involved in this program as Bank guarantor and counter-guarantor for the federal government with respect to the sovereign guarantee for the Bank.

2. Financial situation

- 4.20 The following points summarize the analysis of the financial situation of the state of Ceará for the last five years: (i) sufficient current savings to cover debt servicing; and (ii) budget deficits the last three years, but covered by the 1998 budget surplus resulting essentially from privatization of the State power company (Companhia Energética do Estado do Ceará).
- 4.21 As for its debt, the state of Ceará entered into a debt refinancing contract in September 1997 with the federal government pursuant to law 9496/97, establishing

the criteria for the latter to consolidate, assume, and refinance State debt. As of December 2002, the total debt of the state of Ceará amounted to R\$4.951 billion, of which approximately 37% is foreign debt financed by multilateral organizations.

3. Restructuring and fiscal adjustment program with the federal government

- 4.22 Concurrently with the above debt refinancing, the state of Ceará agreed to a restructuring and fiscal adjustment program with the federal government, aimed at increasing tax collections, reducing personnel costs, and establishing a mechanism of coefficients for sustained debt growth. The fiscal adjustment program goals were set for a three-year period, to be reviewed at the end of each year based on macroeconomic parameters and the State's financial situation.
- 4.23 The table below summarizes the main benchmarks for the state of Ceará under the fiscal adjustment program and actual performance for the year 2001. The 2001 evaluation conducted by the National Treasury indicated that the state of Ceará's failure to meet the income goals did not constitute noncompliance with the terms of the agreement, and was therefore not subject to a penalty.

2001, based on the evaluation by the National Treasury Secretariat		
Indicator	Projected	Actual
Debt/Actual net income	< 1.26	1.26
Primary outturn	> R\$-64.34 million	R\$-59.60 million
Personnel expenses / Net current income	< 60%	49.87%
Revenues	> R\$2.398 billion	R\$2.274 billion
Investment/ Actual net income	< 17.63%	16.27%

- 4.24 Although CAGECE will be the borrower and not the state of Ceará, the State public debt projections in the most recent agreement on goals for the restructuring and fiscal adjustment program signed in 2002, for the 2002-2004 period, includes R\$380 million to cover the proposed Bank loan for this program, which at the present rate of exchange (R\$3.5/US\$) is sufficient to cover the US\$100 million loan under consideration. The Financial Viability section under the Viability and Risks chapter provides a more detailed analysis of the financial capacity of the state of Ceará with respect to the proposed program.

V. VIABILITY AND RISKS

A. Technical viability

- 5.1 The works to be financed under this program do not involve any special technical difficulties in terms of either construction or operation, since the technologies considered are widely used in water supply and sanitation services. Their sizing was based on studies that ensure great security, and the construction technology to be used will provide economic and construction work advantages.
- 5.2 Project design for the civil works is well advanced, with adequate engineering studies and acceptable cost estimates prepared in accordance with generally accepted engineering standards and principles. The designs represent least-cost alternatives that are technically viable have been extensively tested in similar conditions in the country.
- 5.3 Concerning program execution, the schedule fairly reflects the times needed to perform the planned activities. It was prepared taking into account the characteristics of the works, the time to process prequalification and bids, and CAGECE's experience with similar projects.

B. Environmental viability

- 5.4 The program is an intervention for the rehabilitation and conservation of the environment, in particular water resources that will benefit from the sanitation actions in Fortaleza and the municipalities included in the program. The measures will mitigate the current adverse impact on the urban environment and, like any mitigation measure, may have a positive and negative impact. The environmental impact assessment of the planned interventions showed that the program works and actions will mostly have a positive social and environmental impact.

1. Positive impact

- 5.5 In terms of their socioeconomic dimension with respect to the environment, the program interventions will help improve the quality of life of the low-income population. Extending water and sanitation services will benefit 300,000 families. Improving sanitary conditions will help reduce the incidence of waterborne diseases, thus improving family health, especially among the poorest families currently living in degraded urban conditions. The construction work will also generate opportunities for employment in the beneficiary cities.
- 5.6 In terms of its environmental dimension, the program will have a positive impact on the condition of waterways that today receive untreated effluents. Reuse of water, emphasized by this program, will have a positive environmental impact on two

counts: first, water is a scarce resource during some seasons of the year, justifying the reuse of wastewater treatment plant effluents for agriculture; and second, intermittent rivers can not dilute treatment plant effluents, so waterways will only be fed by treated effluents that can be reused for agricultural purposes.

- 5.7 Institutional strengthening for environmental management through the establishment of a CAGECE office for environment management will enhance service efficiency and have a multiplier effect in other regions where the CAGECE operates.

2. Negative impact

- 5.8 Most of the negative impact, whether social or environmental, relate to the civil works phase.
- 5.9 In terms of its environmental dimension, the program impact during construction work should be low to moderate in magnitude, temporary and localized, and can be avoided or controlled by means of appropriate mitigation measures. The program EIA concluded that the increase in pretreated wastewater discharged through the sea outfall when the Fortaleza systems were operating did not affect environmental conditions in the coastal area. The program provides resources to monitor the condition of discharges and the quality of the bodies of water receiving effluent (paragraph 3.20).
- 5.10 In terms of its social dimension, the most significant negative impact revolves around the need to expropriate or clear areas to build infrastructure. There will be asset losses through the compulsory sale of real property and through potential losses in the value of properties in the vicinity of pumping stations. Despite its high social import, the involuntary relocation of 80 families is a low magnitude impact that can be mitigated through implementation of a resettlement plan designed with the participation of the affected population, in accordance with the principles established in the Bank policy OP-710.
- 5.11 In light of the magnitude of the works contemplated in the program, it can be inferred that socioenvironmental impact can be avoided or appropriately addressed. The socioenvironmental viability of the program is ensured by the mitigation and compensation measures defined for the Fortaleza project and the projects for the municipalities in the sample. In addition, the eligibility criteria and guidelines for project environmental evaluation and control contained in the Operating Regulations are sufficient to mitigate any future negative impact.

C. Institutional viability

- 5.12 The institutional viability of the program was examined from the standpoint of CAGECE's capacity to execute the works making up the program and to operate the systems upon completion of the construction phase.

- 5.13 CAGECE is already experienced in executing projects with multilateral financial institutions. Noteworthy examples include the SANEFOR (695/OC-BR and 892/SF-BR) and PRODETUR I (841/OC-BR) programs with the Bank, and the PMSS II program with the World Bank. At present, a unit in CAGECE has been working in a satisfactory manner in the preparatory work for the proposed program. The unit will be strengthened by individual consultants hired to provide advisory services during program execution, to assure a steady work pace for the program, while not overburdening the CAGECE structure with additional personnel and costs. With respect to system operations, CAGECE is acceptably operating and maintaining existing systems, as reflected in some of the management indicators described in the previous chapter. On the basis of this experience, CAGECE is considered to have sufficient capacity to operate and maintain the systems implemented under this program.

D. Financial viability

- 5.14 The financial viability of the program was examined, on the one hand, from the standpoint of CAGECE's capacity to take on the loan and service the resulting debt; and, on the other, from the standpoint of the state of Ceará's capacity to guarantee and assume part of the local counterpart contribution, and to extend the counterguarantee required by the federal government in exchange for its guarantee for the Bank loan.

1. CAGECE borrowing capacity

- 5.15 CAGECE is the borrower in this operation. Financial projections for the company were prepared, factoring in the renewal of the concession contract with the municipality of Fortaleza requiring CAGECE to pay it a concession fee equivalent to 1.5% of total billings pursuant to the agreements negotiated by the parties. The following assumptions were also taken into account: (i) the current agreement will be maintained, whereby CAGECE pays the state of Ceará a rental fee for use of the systems financed by the State under the SANEFOR (695/OC-BR and 892/SF-BR) program, although the debt will continue to be paid with shares in lieu of cash; (ii) physical losses will be reduced, in accordance with program goals; (iii) the same cost structure as in 2002 will be retained; and (iv) rates and rate structure will be revised so that the median rate per cubic meter increases 10% a year in real terms in 2003 and 2004, with a 0.3% reduction in consumption for each 1% increase in price.
- 5.16 The investment plan assumes an amount of US\$405 million to be realized through 2009, to meet the needs of the proposed program, in addition to PRODETUR I and II and the Social Action Program for Sanitation; PMSS II and Active Community with the World Bank; PROSANEAMIENTO I and II with the Caixa Econômica Federal [a government-owned savings and investment bank], and the Alvorada Project with the federal government. CAGECE intends to finance this investment

program as follows: 35% with debt, 41% with transfers from the state of Ceará, 17% with federal government transfers, and the remaining 6% with its own funds. The state of Ceará will contribute the full amount of the local counterpart funding for the program.

- 5.17 Projections for this scenario were run in current R\$, assuming a 5% annual inflation rate for Brazil and 1.5% for the United States, and a R\$/US\$ exchange rate based on the inflation rate spread. The tables below summarize the results of these financial projections in terms of income statement and cash flow in current US\$ million.

CAGECE income statement (current US\$ million)									
	2003	2004	2005	2006	2007	2008	2009	2010	2011
Operating revenue	71.1	88.9	102.4	113.5	124.7	134.8	142.8	147.8	153.0
O&M costs	-56.3	-64.0	-70.8	-77.6	-83.6	-88.9	-92.6	-95.4	-98.3
Operating income	14.8	24.9	31.6	35.9	41.1	45.9	50.2	52.4	54.7
Depreciation	-5.4	-5.8	-6.6	-7.5	-8.4	-9.3	-9.9	-10.2	-10.4
Loan loss provisions	-2.2	-2.6	-2.9	-3.0	-3.1	-3.1	-3.3	-3.4	-3.5
EBIT (1)	7.2	16.5	22.1	25.4	29.6	33.5	37.0	38.8	40.8
Financial income/(expenditures)	-7.0	-7.6	-9.4	-12.0	-18.7	-19.4	-18.5	-17.4	-16.4
EBT (2)	0.2	8.9	12.7	13.4	10.9	14.1	18.5	21.4	24.4
Taxes	-0.1	-3.1	-4.5	-4.7	-3.8	-4.9	-6.5	-7.5	-8.5
Net income	0.1	5.8	8.2	8.7	7.1	9.2	12.0	13.9	15.9
O&M+D coverage	115%	127%	132%	133%	136%	137%	139%	140%	141%

(1) Earnings before interest and taxes

(2) Earnings before taxes

CAGECE capital adequacy (current US\$ million)									
	2003	2004	2005	2006	2007	2008	2009	2010	2011
Collections	68.9	86.3	99.5	110.5	121.6	131.7	139.5	144.4	149.5
Payments for O&M costs	-49.7	-57.4	-64.1	-70.8	-76.7	-81.9	-85.5	-88.2	-91.0
Debt servicing	-13.2	-18.2	-18.2	-20.2	-23.9	-25.1	-24.3	-21.7	-20.9
Surplus for investment	6.0	10.7	17.2	19.5	21.0	24.7	29.7	34.5	37.6
Collections / O&M+DebtServ	110%	114%	121%	121%	121%	123%	127%	131%	134%

- 5.18 As can be seen, the projections show positive outturns for CAGECE as of 2003, with coverage of operating, maintenance, and depreciation costs by service income increasing gradually from 115% in 2003 to 132% in 2005, and continuing to grow to 141% in 2011. Under cash flows, the ratio of collections to operation, maintenance, and debt servicing costs increases gradually from 110% in 2003 to 121% in 2006, then dips slightly in the next few years due to amortization of the investment plan loans. The cash flow surplus for investment is sufficient to easily cover the portion of the investments to be financed with capital resources.

2. State of Ceará's capacity to make the counterpart contributions and extend the counterguarantee

- 5.19 The state of Ceará's capacity to make the program counterpart contributions and extend the federal government counterguarantee was analyzed from a legal standpoint (i.e., its authority to assume these commitments), and from a financial standpoint (i.e., its capacity to generate the resources).
- 5.20 From the legal standpoint, the state of Ceará has duly met the terms of the fiscal adjustment program agreements with the National Treasury Department (STN). In addition, the program was included in the most recent review of those agreements, in the amount of R\$380 million, which exceeds the amount of the proposed loan to CAGECE at the current rate of exchange.
- 5.21 From the financial standpoint, state of Ceará financial projections were based on the following assumptions: (i) 2003 and 2004, in accordance with the last restructuring and fiscal adjustment agreement executed with the STN; (ii) remaining years (2005 to 2011), calculated on the basis of the same state GDP growth, inflation and fiscal performance assumptions implicit in the fiscal adjustment program; and (iii) the state of Ceará as the borrower and liable for the local counterpart contribution and debt servicing. These financial projections show a current surplus every year, after servicing all debts, equivalent to US\$96 million on average for every year during the program execution period (more than enough to cover the counterpart contribution), and US\$147 million for the remaining years of the projection (more than enough to service the debt in its capacity as counterguarantor should CAGECE default on the loan). It was therefore concluded that the state of Ceará has the capacity to assume the local counterpart contribution and the counterguarantee it must provide to the federal government.

E. Socioeconomic viability

- 5.22 A socioeconomic evaluation of each program project was performed, based on a comparison of economic costs and benefits with and without the project. The program comprises two types of projects: water supply and sewerage. The evaluation considered the incremental investment, operation and maintenance costs, at efficiency prices.

1. Sewerage systems

- 5.23 For the sanitary sewerage systems, benefits were quantified using the contingent valuation method, consisting of asking potential program beneficiaries, through household surveys, up to how much they were willing to pay for the improvements in or implementation of the different services provided through execution of the program works. This method is used for non-observable markets where traditional supply and demand do not exist.

- 5.24 The program consists of construction of a sewerage system in most of municipal Fortaleza and 19 towns in the interior of the state of Ceará. In Fortaleza, the works will be concentrated in the Siqueira and Cocó watersheds. Construction work in the interior of the state will cover the municipalities of Aracati, Crateús, Eusébio, Iguatú, Maracanaú, Maranguape and Quixadá, localities selected for the program sample, and Aracoiaba, Baturité, Camocim, Choró, Crato, Horizonte, Jaguaratama, Jaguaribe, Pacajús, Pentecoste, Tianguá and Ubajara, that were not part of the sample.
- 5.25 A two-step approach was used to compute the maximum willingness to pay. The first only considered the interest variable (WTPV), and the second used a more complete model, incorporating additional variables from the survey that have a bearing on people's willingness to pay. Variables for inclusion in the logit regression were selected from among tabulations, transformations, correlation analyses, and others. To devise the adjusted model, the logit regression was processed, and the remaining variables were those that statistically affect people's willingness to pay.
- 5.26 These results served to determine willingness to pay (WTP) and the following economic evaluation indicators for the towns covered by the program.

Locality	Population (000)	Coverage (%)	Benefit (R\$ million)	Works inv.	NPV	IRR (%)
Fortaleza	768.0	50.0	149.3	60.6	88.6	45.9
Aracati	47.6	-	11.0	6.4	4.6	28.7
Crateús	55.6	26.0	11.8	11.0	0.9	13.2
Eusebio	15.1	-	2.7	2.5	0.3	13.8
Iguatú	72.2	2.5	15.6	10.2	5.4	23.6
Maracanaú	33.4	-	8.6	8.3	0.3	12.5
Maranguape	64.1	1.5	11.4	8.0	3.5	21.2
Quixadá	56.8	9.0	7.9	7.9	0.1	12.2
Total	1,112.8	36.5	218.3	114.9	100.1	32.7

(*) Year 2002

2. Water supply in the interior

- 5.27 Benefits were quantified using the economic evaluation method called the Public Works Simulator (SIMOP). This method simulates water demand and supply for a public utility, in order to calculate the economic benefits resulting from increasing water production and delivery capacities. The data inputs come from the characteristics of the demand curve for each group of consumers targeted by the study, obtained through field research, and the present water cost and supply levels.
- 5.28 Water supply works will be carried out in the municipalities of Baturité, Campos Sales, Mombaça, Santa Quitéria and Tablero del Norte (part of the sample) and Aracati, Chaval, Iguatú, Maranguape, Milagros, Senador Pompeu and Tiangua (not

included in the sample). To estimate water demand price elasticity for the program towns, a survey was conducted of several households, regardless of whether they were connected to the public water system, in order to identify the basic elements for the analysis. A statistical analysis was then run with the data from the field work.

- 5.29 The price and income elasticity results were as expected. Demand for water, a commodity that can hardly be substituted, should be inelastic. This was confirmed by the estimated model for each town in the sample. The table below shows the results of the economic evaluation.

Locality	Population (000)	Coverage (%)	Benefit (R\$ million)	Works inv.	NPV	IRR (%)
Baturité	27.7	76.8	14.2	4.1	10.0	77.8
Campos Sales	18.8	74.3	41.6	3.2	38.3	100.0
Mombaça	18.2	77.4	5.0	2.7	2.3	25.6
Santa Quitéria	17.5	89.2	14.3	4.4	7.2	47.6
Tabuleiro do Norte	19.0	88.4	10.5	3.2	9.9	39.8
Total	101.2	80.7	85.6	17.6	67.7	59.4

(*) Year 2002

3. Sensitivity analysis

- 5.30 A benefits sensitivity analysis was conducted, especially for the parameters that may impact the economic evaluation. These parameters are price elasticity for projects including water, willingness to pay (WTP) for projects to dispose of wastewater, and project costs. The analysis consisted of finding the value of the parameters that render the project unfeasible. The analysis showed that the viability results were robust, except in the case of the sewerage systems in Eusebio, Maracanaú and Quixadá, which may not be profitable. It should be noted that this analysis was conservative, since for the economic analysis, local direct costs were increased by 10% for contingencies.

4. Beneficiary analysis

a. Ability to pay

- 5.31 The ability of the beneficiaries to pay for the water and sanitation systems was calculated. This ability to pay was then analyzed by ensuring that the monthly utility bill amounted to less than 5% of family income. Basic payment at the low-income consumer rate is R\$3. Data on income distribution in Fortaleza and the towns of the interior eligible for service implementation show that 10% of the families would find it difficult to pay the bill. For the water utility, this does not present a financial problem since these accounts represent less than 3% of total billing.

b. Impact on low-income groups

- 5.32 This program qualifies as a poverty-targeted investment (PTI). The percentage of low-income beneficiaries is 65.9%, bearing in mind that low income for Brazil is US\$124 per capita per month adjusted for September 2002. Although the program qualifies as a PTI, the borrower will not use the additional 10% financing.

F. Benefits

- 5.33 The primary benefit of the program is to improve sanitation services in Fortaleza and expand water supply and basic sanitation services in medium-sized cities in the interior of Ceará state. For the population, this improvement will translate into better water quality at the beaches in western Fortaleza, greater availability of clean water and better wastewater disposal in the towns of the interior thanks to the treatment plants. In addition, the operating enhancement component and private sector participation in service provision will not only assure the sustainability of the new quality levels achieved, but their progressive improvement will also position CAGECE to take on new projects in the future. Ultimately, these direct benefits are expected to reduce the incidence of waterborne diseases among the population targeted by the program.

G. Risks

- 5.34 One potential risk is that program benefits may be affected by: (i) inadequate water resources management by the state of Ceará because of uncontrolled effluent discharges into bodies of water and the beaches; or (ii) lack of oversight by the regulatory agency.
- 5.35 To mitigate the first risk, this operation will strengthen the institutional capacity of CAGECE in environmental management, by establishing an environment management department to help increase service delivery effectiveness and prevent uncontrolled effluent discharges in bodies of water and beaches.
- 5.36 To mitigate the second risk, the Bank is working with the National Sanitation Secretariat of the City Ministry to implement and strengthen the state of Ceará Public Services Regulatory Agency (ARCE). To this end, work is ongoing to develop rules for monitoring services and hold workshops to train agency staff.

CEARÁ SANITATION PROGRAM (BR-0324)

LOGICAL FRAMEWORK

Narrative summary of objectives	Indicators	Means of verification	Assumptions
<p>Goal Improve sanitary and environmental conditions for the inhabitants of the state of Ceará.</p>	<ul style="list-style-type: none"> • Water quality at the western beaches of Fortaleza: reduce the number of days that beaches are declared unfit for swimming from 300 days/year in 2002 to 20 days/year in 2008. • Reduce the number of consultations/year for acute diarrhea in Fortaleza from 60,000 to 20,000. • Reduce the number of consultations/year for acute diarrhea from 50,000 to 15,000 in urban centers of 5,000 to 50,000 inhabitants in the state. 	<p>Physical and chemical analysis by private laboratories</p> <p>Health Secretariat of the State of Ceará</p>	
<p>Purpose Expand and improve the efficiency of water supply and sanitation services in the state of Ceará</p>	<ul style="list-style-type: none"> • Reduce the service cost from R\$0.80/m³ in 2003 to R\$0.60/m³ in 2008. • Reduce complaints regarding water service from 8% of total users to 2% between 2003-2008. • Increase CAGECE customer satisfaction rate from 85% to 90% between 2003 and 2008. 	<p>CAGECE accounting records</p> <p>Direct surveys</p> <p>Direct surveys</p>	<p>The urban occupation policy is maintained and population growth remains within the projected parameters.</p> <p>Other factors affecting the sanitary conditions for the population (solid waste collection, for instance) do not deteriorate.</p>

Narrative summary of objectives	Indicators	Means of verification	Assumptions
<p>Components</p> <p>Improve sanitation conditions in Fortaleza</p> <p>Improve availability and reliability of water and sanitation services in the state</p> <p>Improve CAGECE operations management</p>	<ul style="list-style-type: none"> 63,000 households in Fortaleza receive new connections to a sanitation system with proper wastewater disposal between 2003 and 2008. 150,000 households in urban centers in the interior receive new connections to water supply and 250,000 new connections to a sewerage system with proper wastewater disposal between 2003 and 2008. The available water supply per inhabitant per day provided by the system never falls below 150 liters in any of the service areas in towns in the interior. The UFW level at CAGECE drops from 38% to 31% by program completion. 	<p>Contractor works completion reports</p> <p>Idem</p> <p>CAGECE operations department statistics</p> <p>CAGECE sales department statistics</p>	<p>Service regulations are fully implemented.</p> <p>There are no illegal discharges into bodies of water.</p>
<p>Activities</p> <ul style="list-style-type: none"> Construction of wastewater treatment plants Construction of sewage collection systems Construction of trunk collectors in Fortaleza Sectorization and adaptation of existing water supply systems Construction of water supply systems Installation and replacement of water meters 	<p>Budget</p> <p>Fortaleza sewerage system construction: US\$60 million</p> <p>Water supply works in towns in the interior: US\$46 million</p> <p>Sewerage system construction in towns in the interior: US\$46 million</p> <p>Actions to enhance operations: US\$15 million</p>	<p>Works completion reports</p> <p>Idem</p> <p>Idem</p> <p>Idem</p>	

TENTATIVE PROCUREMENT SCHEDULE							
	ITEM	NUMBER OF CALLS FOR BIDS	TOTAL COST (US\$000)	FINANCING		TYPE OF BIDDING ¹	QUARTER OF PUBLICATION
				IDB	LOCAL		
Group I		7	26.8	16.3	10.5		
	Works						
	Fortaleza sewerage system (K-2, SD-2, SD-3, SD-4 and SD-5)	1	5.5	3.5	2.0	ICB	III Q 03
	Sewerage systems in the interior (Aracati, Maranguape and Quixadá)	1	11.3	8.7	2.6	ICB	III Q 03
	Goods						
	Procurement for UFW	1	1.7	1.0	0.7	ICB	III Q 03
	Operating improvements, Phase I	1	1.8	1.0	0.8	ICB	III Q 03
	Geoprocessing	1	1.5	0.9	0.6	ICB	III Q 03
	Consultants						
	Supervision of civil works, Group I	1	2.0	1.2	0.8	ICB	II Q 03
Group II		5	29.9	20.4	9.5		
	Works						
	Fortaleza sewerage system (CE-4 and master system)	1	9.6	6.1	3.5	ICB	II Q 04
	Water supply in the interior (Campos Sales, Mombaça, Tabuleiro do Norte and Santa Quitéria)	1	4.4	3.4	1.0	ICB	II Q 04
	Sewerage systems in the interior (Crateús, Eusebio and Maracanaú)	1	9.1	7.0	2.1	ICB	II Q 04
	Goods						
	Operating improvements, Phase II	1	4.4	2.5	1.9	ICB	III Q 04
	Consultants						
	Supervision of works, Group II	1	2.4	1.4	1.0	ICB	I Q 04
Group III		5	35.7	25.3	10.4		
	Works						
	Water and sewerage in the interior (Chaval, Milagres, Senador Pompeu and Jaguaribe)	1	4.7	3.6	1.1	ICB	I Q 05
	Fortaleza sewerage system (SD-7, SD-8, SE-1 and SE-2)	1	10.1	6.5	3.6	ICB	I Q 05
	Water and sewerage in the interior (Aracati, Baturité and Maranguape)	1	9.0	6.9	2.1	ICB	III Q 05
	Water and sewerage in the interior (Iguatú)	1	6.7	5.2	1.5	ICB	III Q 05
	Consultants						
	Supervision of works, Groups III and IV	1	5.2	3.1	2.1	ICB	I Q 05
Group IV		4	25.8	19.8	6.0		
	Works						
	Water and sewerage in the interior (Tanguá)	1	6.5	5.0	1.5	ICB	I Q 06
	Sewerage in the interior (Horizonte and Pacajús)	1	6.5	5.0	1.5	ICB	I Q 06
	Sewerage in the interior (Crato, Aracoiaba, Chorozinho and Camocim)	1	6.8	5.2	1.6	ICB	III Q 06
	Sewerage in the interior (Pentecoste, Jaguaratama and Ubajara)	1	6.0	4.6	1.4	ICB	I Q 07
	TOTAL	21	118.2	81.8	36.4		

ICB: International Competitive Bidding: 17 calls for bids
LCB: Local Competitive Bidding: 4 calls for bids

¹ Local competitive bidding is understood to mean procedures allowed under national legislation.